
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: March 2012

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1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions, the California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. Conditions of channel water salinity in the Suisun Marsh are determined by monitoring specific electrical conductivity, which is referred as "specific conductance" (SC). The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below to ensure salinity standards are met to protect habitat for waterfowl in managed wetlands:

COMPLIANCE STATIONS:		
Station Identification	Station Name	General Location
C-2*	Collinsville	Western Delta
S-64	National Steel	Eastern Suisun Marsh
S-49	Beldon's Landing	North-Central Suisun Marsh
S-42	Volanti	North-Western Suisun Marsh
S-21	Sunrise	North-Western Suisun Marsh

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh:

MONITORING STATIONS:		
Station Identification	Station Name	General Location
S-97	Ibis	Western Suisun Marsh
S-35	Morrow Island	South-Western Suisun Marsh

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are also included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

* Throughout the report, the representative data from nearby USBR station is used in lieu of data from station C-2.

2. MONITORING RESULTS

2.1 Channel Water Salinity Compliance

During the month of March, salinity conditions at all five compliance stations were in compliance with channel water salinity standards (Table 1). Compliance with standards for the month was determined for each compliance station by comparing the progressive daily mean of high-tide SC with respective standards. The standard for compliance stations C-2, S-64, S-49, S-21, and S-42 was 8.0 mS/cm for March 2012. Table 1 lists monthly mean high-tide SC at these compliance stations. The progressive daily mean (PDM) is the monthly average of both daily high-tide SC values. The mathematical equation is shown below:

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\text{\# days of the month}}$$

2.2 Delta Outflow

Outflow for March 2012 ranged between 7,000 cfs and 51,100 cfs (Figure 3). For the month, outflow began at 10,000 cfs decreasing to 7,000 cfs before responding to a precipitation event on March 13th. Outflow increased to a high of 51,100 cfs on March 19th and decreased to 16,500 cfs on March 25th. A second precipitation event started on March 25th and drove outflow up to 35,000 cfs on March 31st. The monthly Delta outflow is represented by the mean Net Delta Outflow Index (NDOI). The NDOI is the estimated daily average of Delta outflow. Mean NDOI for March 2012 is listed below:

Month	Mean NDOI (cubic feet per second)
March	19,500

2.3 Rainfall

There were three precipitation events in March for a total of 6.77 inches. The first started on February 29th and totaled 0.47 inches followed by a second larger event on March 13th for a total of 3.75 inches. The last event occurred on March 25th for a total of 2.70 inches. This data was recorded at the Fairfield Water Treatment Plant. The monthly total is below:

Month	Total Rainfall (inches)
March	6.77

2.4 Suisun Marsh Salinity Control Gates (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during March 2012 is summarized below:

Date	Gate Status	Flashboards Status	Boat Lock Status
March 1-31	3 Open	In	Partially Closed

Given a wet March and higher outflow, operation of the SMSCG was not necessary. Boat lock gates are partially closed due to ongoing investigation on safety concerns expressed by Delta Field Division staff. NOAA was briefed about the safety concern and will schedule a field visit to assess options with DWR to balance fish needs and safety needs.

3. DISCUSSION

3.1 Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- Delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operations of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions During the Reporting Period

During March 2012, PDM salinity levels at Collinsville (C-2), National Steel (S-64), Beldon's Landing (S-49), Sunrise Club (S-21) and Volanti (S-42) ranged between 0.98 mS/cm and 5.3 mS/cm as shown in Figure 1. Coming into March, salinity levels were gradually increasing due to lower outflow and lack of rainfall. Salinity levels then decreased in response to a series of precipitation events and held steady for the remainder of the month.

Salinity levels at monitoring stations Morrow Island (S-35) and Ibis (S-97) began the month at higher levels then gradually decreased in response to higher outflow and ended the month at 5.4 mS/cm and 6.6 mS/cm as shown in Figure 2.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for March 2012 were compared with means for those months during the previous nine years (Figure 4).

March's mean salinity pattern for all compliance and monitoring stations ranked tenth in salinity levels for the past 10 years. The pattern followed that of 2003 and 2010 but at a slightly higher salinity level. As expected, the salinity levels gradually increased from east to west with the exception of S-42 and S-21. The lower salinity levels at these two stations may be due to local inflows.

Table 1

**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations
March 2012**

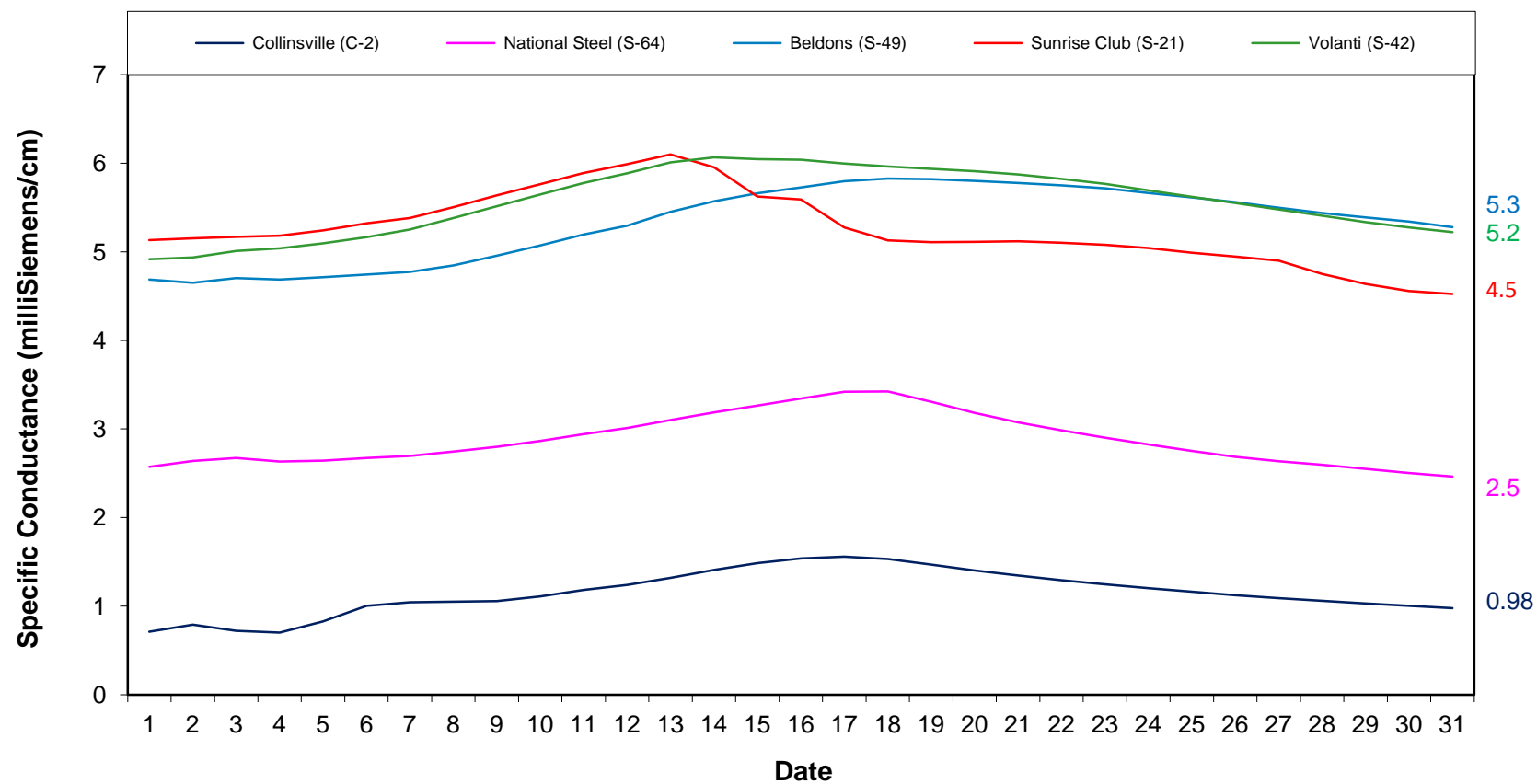
Station Identification	Specific Conductance (mS/cm)*	Normal Standard	Normal Standard Met?
C-2**	0.98	8.0	Yes
S-64	2.5	8.0	Yes
S-49	5.3	8.0	Yes
S-42	5.2	8.0	Yes
S-21	4.5	8.0	Yes

*milliSiemens per centimeter

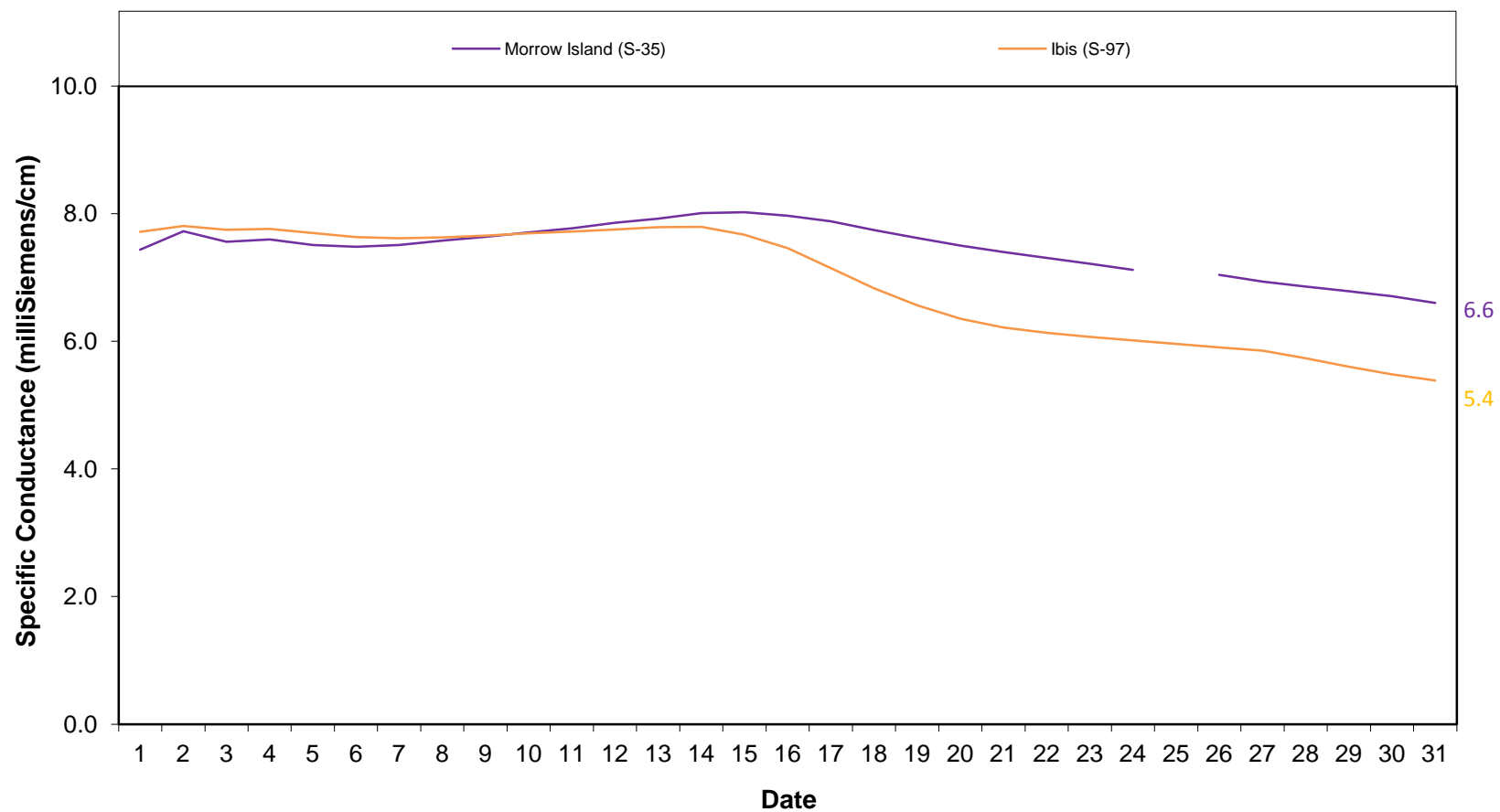
**The representative data from nearby USBR station is used in lieu of data from station C-2.

**Figure 1. Suisun Marsh Progressive Mean High-Tide Specific Conductance
for Compliance Stations
March 2012**

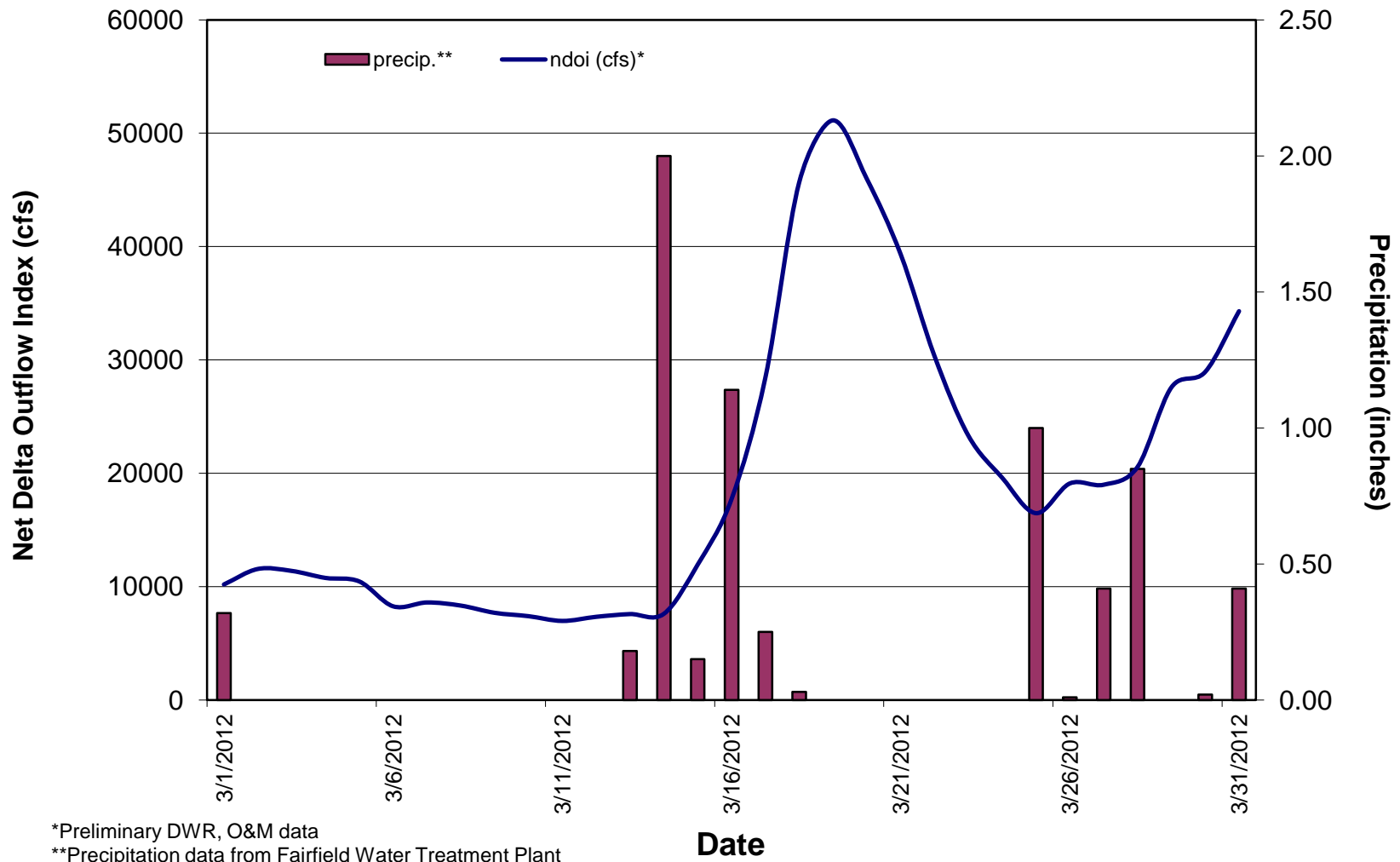
Standard = 8.0 mS/cm



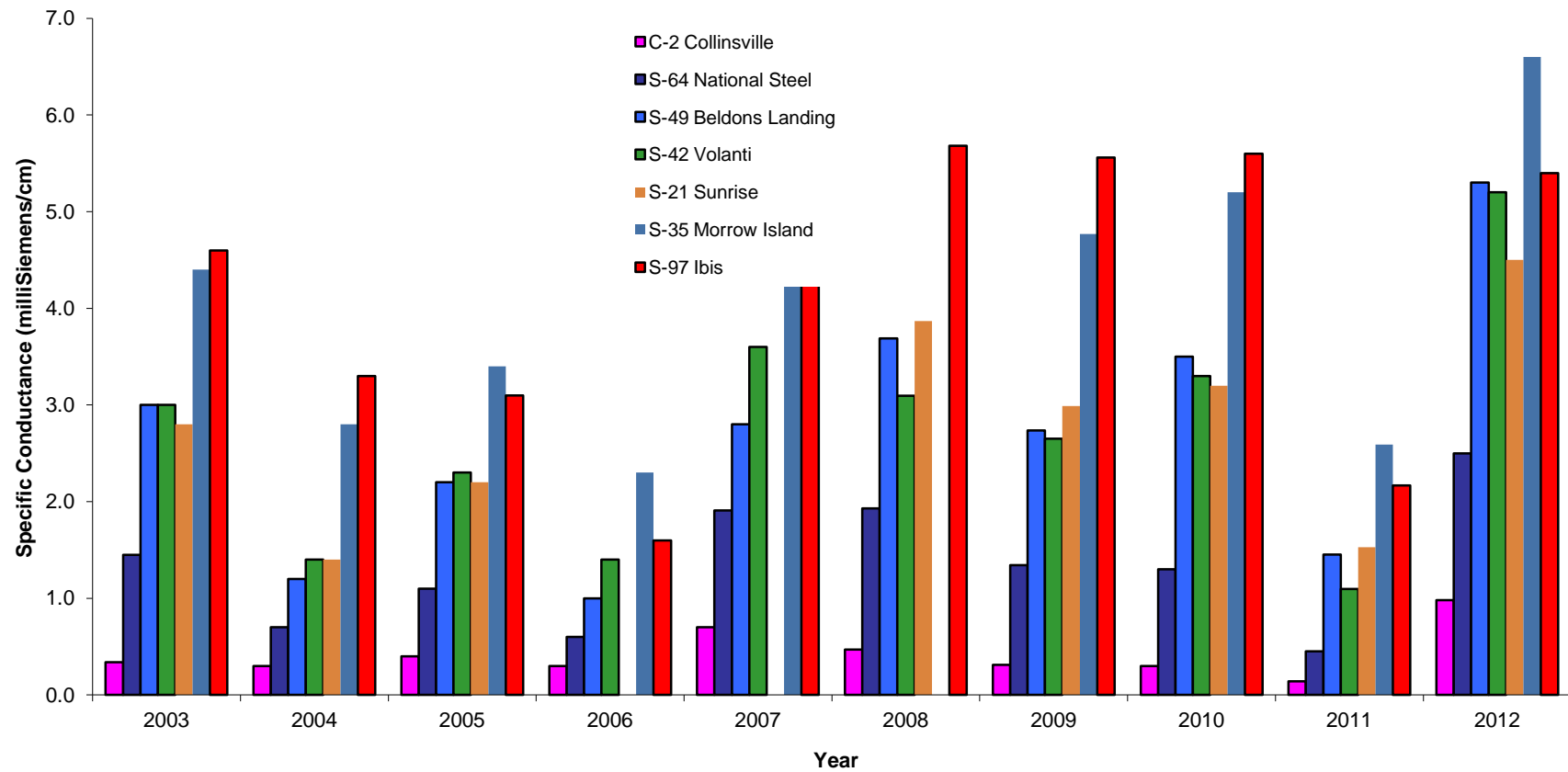
**Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance
for Monitoring Stations
March 2012**



**Figure 3. Daily Net Delta Outflow Index and Precipitation
March 2012**



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
March of 2003-2012******



****2006 and 2007 data not available for S21 due to flooded roadways.

